

CLAIMS

1. A centrifugal projecting apparatus comprising an impeller R, an impeller cover 20 surrounding the impeller R, and a liner that is located within the impeller cover 20, characterized in that

said impeller cover 20 comprises the first and second-side cover components 21, 21A located at right and left sides, front and rear cover components 20A, 20A, and a ceiling cover component 22, which can be opened and closed,

said liner is engaged by screws 32, 32A to the impeller cover 20, so that the liner can be disengaged from the impeller cover 20, said liner comprising first and second-side liner components 31, 31A having openings through which a rotating-shaft of the impeller R can pass, front and rear-side liner components 34, 34A that are U-shaped and that are pressed against and fixed on the ends of the first and second-side liner components 31, 31A, and liner components 37, 39 that are pressed against and fixed on the upper ends of the first and second-side liner components 31, 31A and the front and rear-side liner components 34, 34A.

2. The apparatus of claim 1 wherein said liner components 37, 39 are pressed against and fixed on the upper ends of the first and second-side liner components 31, 31A and the front and rear-side liner components 34, 34A by means of a fixing member that provides a pressing force that is located on the impeller cover 20.

3. The apparatus of claim 1 wherein said liner components are comprised of a frame-liner component 37 that is engaged with the upper ends of the first and second-side liner components 31, 31A and the front and rear-side liner components 34, 34A and a ceiling-side liner component 39 that can be engaged with and disengaged from the frame-liner component 37, and wherein a labyrinthine structure is located at the contacting surfaces of the ceiling-side liner component 39 and the first and second-side liner components 34, 34A, said

labyrinthine structure having four portions bent in the direction of the projection of the projecting members.

4. A centrifugal projecting apparatus having an impeller R in which a hub 4, impeller-side plates 5, 5A, impeller blades 6, and a distributor 7 are rotatably are located on a rotating shaft, an impeller cover 20 surrounding the impeller R, and a liner located within the impeller cover 20, characterized in that

said impeller cover comprises at least first and second cover components 21, 21A located at right and left sides, front and rear cover components 20A, 20A, and a ceiling cover component 22 that can be opened and closed,

said liner components are engaged by screws 32, 32A with the impeller cover 20 and disengaged from it, said liner components comprising first and second-side liner components 31, 31A having openings through which the rotating shaft of the impeller R and the impeller side plates 5, 5A can pass, front and rear-side liner components 34, 34A that are U-shaped and that are pressed against and fixed on the ends of the first and second-side liner components 31, 31A, a frame-liner component 37, which is engaged with the upper ends of the first and second-side liner components 31, 31A and the front and rear-side liner components 34, 34A, and a ceiling-side liner component 39, which is engaged with and disengaged from the frame-liner component 37,

a labyrinthine structure is located at the contacting surfaces of the ceiling-side liner component 39 and the first and second-side liner components 34, 34A, said labyrinthine structure having four portions bent in the direction of the projection of projecting members, and

a fixing member is located on the impeller cover 20 to press and fix said ceiling-side liner 39 against and on the impeller cover 20.

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5. A centrifugal projecting apparatus having an impeller cover 20 surrounding front, rear, left, right, and ceiling sides of an impeller R, first and second-side liner components 31, 31A to protect the left and right sides of the

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impeller cover 20, front and rear side liner components 34, 34A to protect the front and rear sides of the impeller cover 20, a ceiling side liner component 39 to protect the ceiling side of the impeller cover 20, and a frame liner component 37, characterized in that

said impeller cover 20 comprises first and second side cover components 21, 21A having openings at the left and right sides, plate like front and rear side cover components 20A, 20A at the front and rear sides, and a ceiling side cover component 22 that can be opened and closed at the upper side, said impeller cover 20 being generally shaped like a box formed as a trapezoid,

said first and second side liner components 31, 31A are generally shaped like trapezoids and have openings at the center through which first and second side impeller plates 5, 5A pass, said first and second side liner components being fixed on the impeller cover 20 by screws,

said front and rear side liner components 34, 34A are formed as rain gutters that are U-shaped and inclined and are pressed against and fixed on the right and left ends of the first and second side liner components 31, 31A by bolts 36, 36A that are passed through the front and rear side cover components 20A, 20A of the impeller cover 20,

a labyrinthine structure is located at the connecting surfaces between the ceiling side liner component 39 and the first and second side liner components 34, 34A, said labyrinthine structure comprising four portions bent in the direction of the projection of the projecting members,

said frame liner component 37 is shaped as a loop that comprises a vertical plate to define an opening through which the upper ends of the liner components 31, 31A, 34, 34A that are engaged with, pressed against, and fixed on the impeller cover 20 pass, so that the frame liner component is engaged with these upper ends, and

said ceiling side liner component 39 has a looped projection 38 formed along the periphery on the lower surface of it, said looped projection being inserted into a U-shaped groove defined by the upper ends of the side liner

components 31, 31A, 34, 34A and the vertical plate of the frame-liner component 37, said ceiling-side liner component 39 being pressed down by a fixing member that is located on the impeller cover 20 so that it is fixed on the frame-liner component 37.

6. The apparatus of either claim 4 or 5 wherein the angle between each of the front- and rear-side liner components 34, 34A and the ceiling-side liner component is about 50 degrees to 80 degrees.

7. The apparatus of claim 5 wherein the second-side liner component 31a is screwed to the impeller cover 20 through a spacer 33 that is shaped as a horseshoe so as to adjust the distance between them.

8. The apparatus of either claim 4 or 5 wherein the ceiling-side liner component 39 is pressed against and fixed on the frame-liner component 37 by hook members 24, 24 that are located on the upper ends of the right and left sides of the impeller cover 20.

9. The apparatus of any of claims 4 to 7 wherein the bolts 36, 36A are positioned by brackets 35, 35A that are removable from the front- and rear-side cover components 20a, 20A.

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